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Applicant:	Makhervaks	**Conf. No.**:	1922
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Title: ASYNCHRONOUS COMPLETION NOTIFICATION FOR AN RDMA SYSTEM

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PROPOSED AMENDMENT

Sir:

I. PROPOSED AMENDMENTS TO THE SPECIFICATION

[0015] Described below is an asynchronous completion notification system and method applicable to an RNIC (or other system implementing RDMA or InfiniBand), which guarantees that no CQE will ever be left unattended in the CQ. It is assumed for the purpose of this description that the reader has an understanding of the RDMA protocol and its implementation in an RNIC environment. The RDMA protocol is available on the Web ~~at <www.rdmaconsortium.org/home>.~~ through the RDMA Consortium.

[0031] When the software 26 issues a request 34, it not only passes the *Request Completion Notification* 35 and LastPolledCQENum (step S12), but also specifies a notification

type 36, i.e., either solicited or unsolicited. Then, when the processing system 11 detects *request completion notification* (step S13), processing system 11 checks the type of completion notification at step S14 (i.e., solicited/unsolicited or both) using a Notification Type Detection 23 (from Figure 1). For an unsolicited notification request, the methodology described above with reference to Figure 2 is used, i.e., comparison system 20 compares LastPolledCQENumber with LastPlacedCQENumber (steps S15).

II. PROPOSED AMENDMENTS TO THE CLAIMS

1-23. (Canceled)

24. (Currently Amended) An asynchronous completion notification system for use in an RDMA (remote data memory access) network interface card (RNIC) having a completion queue (CQ) for holding completion queue entries (CQEs), comprising:

a computer device;

a system for storing a first CQE number of the most recent CQE placed into the CQ, wherein the first CQE number is stored in a CQ context;

a system for storing a second CQE number of the most recent CQE retrieved from the CQ, wherein the system for storing the second CQE number is implemented by a verb layer;

a system for packaging the second CQE number with each request completion notification verb that is issued;

a processing system for processing the request completion notification verb, wherein the processing system compares the first CQE number with the second CQE number to determine

whether asynchronous completion notification should be immediately performed, and wherein the processing system causes asynchronous completion notification to be immediately performed if the second CQE number is less than the first CQE number or waits until a next CQE is placed into the CQ if the second CQE number is equal to the first CQE number; and

a system for storing a third CQE number for the most recent solicited CQE placed into the CQ, wherein the request completion notification verb is further packaged with a type of completion notification; wherein the processing system includes a system for checking the type of completion notification; and wherein, if the type of completion notification is solicited, the processing compares the third CQE number with the second CQE number to determine whether asynchronous completion notification should be immediately performed.

25. (Previously Presented) The asynchronous completion notification system of claim 24, wherein if the type of completion notification is solicited, the processing system causes asynchronous completion notification to be immediately performed if the second CQE number is less than the third CQE number.

26. (Previously Presented) The asynchronous completion notification system of claim 24, wherein if the type of completion notification is solicited, the processing system waits until a next solicited CQE is placed into the CQ before causing asynchronous completion notification to be performed if the second CQE number is equal to or greater than the third CQE number.

27. (Previously Presented) A method for implementing asynchronous completion notification in an RDMA (remote data memory access) network interface card (RNIC) having a completion queue (CQ) for holding completion queue entries (CQEs), comprising:

storing a first CQE number of a most recent CQE placed into the CQ in a CQ context;

storing a second CQE number of a most recent CQE retrieved from the CQ;

issuing a request for completion notification;

packaging the second CQE number with the request;

processing the request, wherein the processing step compares the first CQE number with the second CQE number to determine whether asynchronous completion notification should be immediately performed, wherein the processing immediately performs asynchronous completion notification if the second CQE number is less than the first CQE number or waits until a next CQE is placed into the CQ before performing asynchronous completion notification if the second CQE number is equal to the first CQE number;

storing a third CQE number for the most recent solicited CQE placed into the CQ;

packaging a type of completion notification with the request;

checking the type of completion notification during the processing step; and

if the type of completion notification is solicited, comparing the third CQE number with the second CQE number to determine whether asynchronous completion notification should be immediately performed.

28. (Previously Presented) The method of claim 27, wherein if the type of completion notification is solicited, the processing step immediately performs asynchronous completion notification if the second CQE number is less than the third CQE number.

29. (Previously Presented) The method of claim 27, wherein if the type of completion notification is solicited, the processing step waits until a next solicited CQE is placed into the CQ before performing asynchronous completion notification if the second CQE number is equal to or greater than the third CQE number.

30. (Currently Amended) A system for implementing asynchronous completion notification in an RDMA (remote data memory access) network interface card (RNIC) having a completion queue (CQ) for holding completion queue entries (CQEs), comprising:

a computer device;

means for storing a first CQE number of a most recent CQE placed into the CQ;

means for storing a second CQE number of a most recent CQE retrieved from the CQ;

means for issuing a request for completion notification;

means for packaging the second CQE number with the request;

means for processing the request, wherein the processing means compares the first CQE number with the second CQE number to determine whether asynchronous completion notification should be immediately performed, wherein the processing means immediately performs asynchronous completion notification if the second CQE number is less than the first CQE number or waits until a next CQE is placed into the CQ before performing asynchronous completion notification if the second CQE number is equal to the first CQE number.

means for storing a third CQE number for the most recent solicited CQE placed into the CQ;

means for packaging a type of completion notification with the request;

means for checking the type of completion notification; and

means for comparing the third CQE number with the second CQE number if the type of completion notification is solicited, to determine whether asynchronous completion notification should be immediately performed.

31. (Previously Presented) The system of claim 30, wherein the processing means immediately performs asynchronous completion notification if the type of completion notification is solicited and if the second CQE number is less than the third CQE number.

32. (Previously Presented) The system of claim 30, wherein the processing means waits until a next solicited CQE is placed into the CQ before performing asynchronous completion notification if the type of completion notification is solicited and if the second CQE number is equal to or greater than the third CQE number.

Respectfully submitted,

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